

Mathematical Tables *and other* Aids to Computation

A Quarterly Journal

Edited by

E. W. CANNON

F. J. MURRAY

C. C. CRAIG

J. TODD

A. ERDÉLYI

D. H. LEHMER, *Chairman*

VII • Number 41 • January, 1953 • p. 1-72

Published by

THE NATIONAL RESEARCH COUNCIL

Washington, D. C.

NATIONAL RESEARCH COUNCIL

DIVISION OF MATHEMATICS

EDITORIAL COMMITTEE

- E. W. CANNON (E.W.C.), National Bureau of Standards, Washington, D. C. Automatic Computing Machinery [ACM].
- C. C. CRAIG (C.C.C.), University of Michigan, Ann Arbor, Mich. Mathematical Statistics [K].
- A. ERDÉLYI (A.E.), California Institute of Technology, Pasadena, Calif. Higher Mathematical Functions [L].
- F. J. MURRAY (F.J.M.), Columbia University, New York, N. Y. Other Aids to Computation [OAC].
- J. TODD (J.T.), National Bureau of Standards, Washington, D. C. Numerical Methods.
- D. H. LEHMER (D.H.L.), *Chairman*, National Bureau of Standards, Los Angeles 24, California.
-

SUBSCRIPTION RATES

1943-1945: (Nos. 1-12) \$12.00 for all 12 issues (not available for separate sale except as noted below*)

1946-1949: \$4.00 per year

1950-1953: \$5.00 per year

Single issues are available for sale as follows:

* 1944 (No. 7, "A Guide to Tables of Bessel Functions," by H. Bateman and R. C. Archibald, 104 pp.) \$2.00

1946-1949 (Nos. 13-28) \$1.25 for single issue

1950-1953 (Nos. 29-40) \$1.50 for single issue

All payments are to be made to National Academy of Sciences, 2101 Constitution Avenue, Washington, D. C.

Agents for Great Britain and Ireland (subscription 42s, 6d for 1953) Scientific Computing Service, Ltd., 23 Bedford Square, London W.C.1.

Published quarterly in January, April, July and October by the National Research Council, Prince and Lemon Sts., Lancaster, Pa., and Washington, D. C.

All contributions intended for publication in *Mathematical Tables and Other Aids to Computation*, and all Books for review, should be addressed to D. H. Lehmer, 16556 Chattanooga Place, Pacific Palisades, Calif.

Entered as second-class matter July 29, 1943, at the post office at Lancaster, Pennsylvania, under the Act of August 24, 1912.

CLASSIFICATION OF TABLES

- A. Arithmetical Tables, Mathematical Constants
- B. Powers
- C. Logarithms
- D. Circular Functions
- E. Hyperbolic and Exponential Functions
- F. Theory of Numbers
- G. Higher Algebra
- H. Numerical Solution of Equations
- I. Finite Differences, Interpolation
- J. Summation of Series
- K. Statistics
- L. Higher Mathematical Functions
- M. Integrals
- N. Interest and Investment
- O. Actuarial Science
- P. Engineering
- Q. Astronomy
- R. Geodesy
- S. Physics, Geophysics, Crystallography
- T. Chemistry
- U. Navigation
- V. Aerodynamics, Hydrodynamics, Ballistics
- Z. Calculating Machines and Mechanical Computation

CONTENTS

JANUARY 1953

Addendum to a Guide to Tables on Punched Cards	1
. G. BLANCH & E. C. YOWELL	
The Sieve Problem for All-Purpose Computers	6
. D. H. L.	
The Use of Large Intervals in Finite-Difference Equations	14
. L. FOX	
Monte Carlo Matrix Inversion and Recurrent Events	18
. H. P. EDMUNDSON	
Recent Mathematical Tables	21
ALBERT & JOHNSON 1047, BHATE 1048, CALIGO 1059, CAMERON 1049, CHUNG & DELURY 1050, DENGLER, GOLAND, & LUKE 1060, FERRARI 1061, FRÖBERG 1042, GODWIN 1062, HALD & SINKBAEK 1051, KRAITCHIK 1043, LEVENE 1052, MARRIOTT 1053, MORIGUTI 1054, NABEYA 1055, NAIR 1056, NATUCCI 1044, PALAMÀ 1045, QUENOUILLE 1057, SMITH, EDWARDS, & BRINKLEY, 1064, ŠMOLÍAKOV & HOVANSKIĀ 1046, SUKHATME, THAWANI, PEND- HARKAR, & NATU 1058, THIRUVENKATACHAR & RAMAKRISHNA 1063.	
Mathematical Tables—Errata	31
MCLACHLAN & HUMBERT 218, NBSMTP 219, VAN DER POL 220.	
Unpublished Mathematical Tables	33
GLODEN 151, 152, 153, GRUENBERGER 154, PORTER 155.	
Automatic Computing Machinery	34
Technical Developments, The USAF-Fairchild Specialized Digital Computer J. J. STONE	35
Discussions, Floating Operations on the EDSAC	
. R. A. BROOKER & D. J. WHEELER	37
Bibliography of Coding Procedure J. T.	47
Bibliography Z: GARDNER 1000, GODELL 1001, HARVARD UNI- VERSITY 1002, INSTITUTE OF RADIO ENGINEERS 1004, INTERNA- TIONAL BUSINESS MACHINES CORPORATION 1005-1009, OFFICE OF NAVAL RESEARCH 1003.	48
News	57
Other Aids to Computation	61
Analogue Calculation of Polynomial and Trigonometric Expans- ions M. G. SCHERBERG & J. F. RIORDAN	61
Bibliography Z: EULER & LUDWIG 1010, GAMBLE & HATTEN 1012, GLUBRECHT 1011, KORN & KORN 1013, TRIBUS 1014, WEINER 1015.	65
Notes	67
143. Analytical Approximations C. HASTINGS, JR.	67
144. Zeros of the Derivative of Bessel Functions of Fractional Order H. E. SALZER	69
145. An Example in the Use of the Differential Analyzer	
. J. G. L. MICHEL	71
146. Two New Mersenne Primes D. H. L.	72
Corrigenda	72